

REMARKS

Claims 1-20, 23 and 24 are all the claims pending in the application.

The Examiner rejects claims 1-20 and 23-24 as unpatentable over *Ryoo* (U.S. Patent No. 5,990,957) in view of *Sun* (U.S. Patent No. 5,790,196) under 35 U.S.C. §103(a).

In response to remarks traversing the rejection above (submitted October 28, 2005), the Examiner first asserts that *Ryoo* teaches, “the total allocatable bits numbers for multiple VOPs within multiple frames.” (Examiner *citing to Ryoo* at Figs. 5A and 5B and col. 11, line 45 to col. 12, line 9; OA page 6). This response is counter to the previously and presently acknowledged failure of *Ryoo* to disclose calculating an un-coded VOP allocatable bit number that is the total number of allocatable bits for uncoded VOPs in a certain period of time (OA dated January 15, 2005 at page 6; OA dated July 27, 2005 at page 3; OA dated December 8, 2005 at page 4).

Turning to *Ryoo* at col. 11, lines 45-67, *Ryoo* teaches that “the entire bit amount is kept constant” even though the bit amount of respective VOPs is different ($VOP0 \neq VOP1 \neq VOP2$). In other words, the total number of bits for the sum of the VOPs in a given frame is kept constant, while the relative weighting of VOPs is varied. *Ryoo* specifically teaches *keeping the target bit amount (number) constant* while allowing picture quality to uniformly degrade based on visual sensitivity (col. 12, lines 10-15; col. 12, lines 18-21). *Ryoo* clearly teaches keeping the total bit number (amount) of a frame constant (Abstract; col. 11, lines 54-59). The Examiner cites to simulation results, wherein *Ryoo* verifies, in part, the maintenance of the desired constant total bit amount of *a frame* while VOP weighting is varied (Abstract; col. 11, line 45 to col. 12, 21).

Further, *Ryoo* at col. 11, line 45 to col. 12, line 9 suggests a method that comprises outputting the bit amount of each VOP as shown in Table 2. One ordinarily skilled in the art would neither conclude that this disclosure teaches nor rely on this disclosure to teach or suggest a target bit number calculating means which calculates a total number of allocatable bits for multiple uncoded VOPs in a certain period of time. *Ryoo* fails to teach a target bit number calculating means which calculates a total number of allocatable bits *for multiple uncoded VOPs in a certain period of time.*

In contrast, claim 1 requires, a target bit number calculating means which performs a series of processes: calculating an uncoded VOP allocatable bit number that is the total number of allocatable bits *for multiple uncoded VOPs in a certain period of time, wherein said calculation is based on a total number of allocatable bits for VOPs in a time span equal to the certain period of time* and based on the number of generated bits for encoded VOPs in the time span. One of ordinary skill in the art would readily recognize the difference between a number which is defined per frame and a number which is calculated and defined for a specified period of time.

Again referring to the Examiner's response to traversal arguments submitted October 28, 2005 (OA pages 6-7), the Examiner does not assert (here) that *Sun* teaches, a target bit number calculating means which calculates a total number of allocatable bits *for multiple uncoded VOPs in a certain period of time.* Rather, the Examiner asserts that *Sun* suggests calculating an *unencoded allocatable* bit number to multiple uncoded VOPs within frames and for each VO or VOP of the frame (Examiner *citing to Sun* at TABLE 1, T, and Fig. 1; OA pages 6-7).

Turning to the Office Action at page 4, we find that the Examiner concedes that *Ryoo* fails to disclose calculating a total number of allocatable bits *for multiple uncoded VOPs in a certain period of time*. Therein, the Examiner relies on *Sun* to teach this required claim subject manner (OA dated December 8, 2005, pages 4-5, Examiner *citing Sun* at Fig. 1 and col. 8, lines 64-68; OA dated July 27, 2005, page 3 *citing Sun* at col. 3, lines 14-30; OA dated January 14, 2005, page 6 *citing Sun* at col. 8, lines 64-68).

Sun teaches a constant output rate of generated bits, when encoding video data (col. 3, lines 13-15). *Sun* teaches adjustment of encoded output dependent upon parameters at the object level (col. 3, lines 17-29, col. 4, lines 26-29; col. 5, lines 9-15; col. 5, lines 35-38). More particularly, a total target bit number is adjusted proportional to the number of header bits used in the previous corresponding object (col. 3, lines 19-22; col. 6, lines 8-12; claims 1-3). Examiner cited text specifically recites, “. . . difference between the actual number of header bits used for all objects in a previous frame and the total number of target bits available *for those objects in an instant frame*”. (col. 8, lines 64-68; OA dated January 14, 2005, page 6). More importantly, *Sun* teaches that a target bit number for all objects in an uncoded VOP is distributed according to corresponding object associated header bits in a previous frame to estimate a target bit number *for each object* in said uncoded VOP (col. 8, lines 50-55).

Again, in contrast, claim 1 requires, “calculating an uncoded VOP allocatable bit number, that is the total number of allocatable bits *for multiple uncoded VOPs* in a certain period of time, wherein said calculation is based on the total number of allocatable bits for VOPs in a time span equal to the certain period of time and based on the number of generated bits for encoded VOPs

in the time span, . . . allocating the uncoded VOP allocatable bit number, calculating a target bit number for the next VOP to be encoded . . .” (claim 1). Claim 1 requires calculating an allocatable bit number for multiple VOPs in a certain period of time. *Sun* teaches allocating a target bit number for a VOP across VOs. *Sun* fails to compensate for the deficiency in *Ryoo* with respect to calculating a total number of allocatable bits *for multiple uncoded VOPs in a certain period of time*.

At least for failing to teach or suggest calculating a total number of allocatable bits *for multiple uncoded VOPs in a certain period of time*, alone or in combination, the rejection of claim 1 as being obvious over *Ryoo* in view of *Sun* under 35 U.S.C. §103(a), should be withdrawn.

The combination of *Ryoo* and *Sun* fail to teach or suggest additional claim subject matter. In addition to allocating the uncoded VOP allocatable bit number, claim 1 requires estimating the number of bits to be generated for encoding the multiple uncoded VOPs based on the predictive area calculating parameter, which is based on an object history. *Sun* teaches estimating the target bits for each object in a given VOP. Primary Reference *Ryoo* teaches target bits are calculated for respective VOPs (col. 10, lines 1-2). Further, the target bit rate *for each* VOP is determined in part by the macroblocks included in each VOP. (*Ryoo* col. 10, lines 11-13). Neither *Ryoo*, nor *Sun* teach or suggest estimating the number of bits to be generated *for encoding the multiple uncoded VOPs*.

The differences in syntactic structure in an MPEG-4 visually encoded data stream are complex but readily known and appreciated by one of ordinary skill in the art. Video Objects are

patently distinguishable from Video Object Planes.¹ *Sun* makes calculations, estimations, and evaluations based on different structures, different data compared to that required by claim 1.

Claim 1 requires calculating an allocatable bit number for multiple VOPs, said multiple VOPs corresponding to a certain period of time, based in part on the number of bits generated in encoding VOPs in a time span equivalent to the time span in the certain period of time. Further, claim 1 requires estimating the number of bits to be generated for encoding the multiple uncoded VOPs based on the predictive area calculating parameter, where the predictive area calculating parameter is based on an object history.

Primary reference *Ryoo* fails to teach or suggest this claim elements and secondary reference *Sun* fails to provide for these deficiencies. At least for this deficiency, the rejection of claim 1 as being obvious over *Ryoo* in view of *Sun* under 35 U.S.C. §103(a) should be withdrawn.

Claim 2 contains the subject matter asserted above in the traversal of the rejection of claim 1, calculating an allocatable VOP bit number for multiple VOPs in a certain period of time and estimating a number of bits to be generated for multiple uncoded VOPs in the certain period of time. An analogous argument to that presented above is hereby asserted in traversal of the rejection of claim 2. Therefore, at least for this deficiency the rejection of claim 2 as being obvious over *Ryoo* in view of *Sun* under 35 U.S.C. §103(a) should be withdrawn.

Claim 19 requires calculating an allocatable bit number, that is the total number of allocatable bits for multiple uncoded VOPs in a certain period of time. An analogous argument asserted in the traversal of claim 1 above is hereby asserted for claims 19. In turn, withdrawal of

¹ FIG 1 at <http://www.informatik.uni-mannheim.de/lib/publications/Kuehne1999a.pdf>; *Sun* at Fig. 1.

the rejection of claim 19 as being obvious over *Ryoo* in view of *Sun* under 35 U.S.C. §103(a) is deemed proper and respectfully requested.

Claims 5 and 6 require, calculating an uncoded frame allocatable bit number, which is a total number of allocatable bits for multiple uncoded frames in a certain period of time, wherein said calculation is based on a total number of allocatable bits for frames in a time span equal to the certain period of time and based on the number of generated bits for encoded frames in the time span. The Examiner applies the disclosure in *Ryoo* and *Sun* in the rejection of claims 5 and 6 as said references were applied in the rejection of claims 1 and 2 (OA pages 4-5).

As discussed above in the traversal of claim 1, The Examiner acknowledges that *Ryoo* fails to disclose calculating an *uncoded VOP/FRAME* allocatable bit number (that is the total number of allocatable bits for multiple uncoded VOPs/FRAMES *in a certain period of time*) based on the total number bits in uncoded VOPs and the total number of generated bits in encoded VOPs/FRAMES *in a time span equal to the certain period of time* (OA page 4; OA dated January 14, 2005, page 6). Therein, the Examiner relies on *Sun* to teach a means for calculating an uncoded VOP/FRAME allocatable bit number, and cites to *Sun* at col. 8, lines 64-68 (OA pages 4-5).

Sun teaches a constant output rate of generated bits, when encoding video data (col. 3, lines 13-15). *Sun* teaches adjustment of encoded output dependent upon parameters at the object level (col. 3, lines 17-29, col. 4, lines 26-29; col. 5, lines 9-15; col. 5, lines 35-38). More particularly, a total target bit number is adjusted proportional to the number of header bits used in the previous corresponding object (col. 3, lines 19-22; col. 6, lines 8-12; claims 1-3). Examiner

cited text specifically recites, “. . . difference between the actual number of header bits used for all objects in *a previous frame* and the total number of target bits available *for those objects in an instant frame*”. (col. 8, lines 64-68; OA page 6). More importantly, *Sun* teaches that a target bit number for all objects in *an uncoded VOP* is distributed according to corresponding object associated header bits in a previous frame to estimate a target bit number *for each object* in said uncoded VOP (col. 8, lines 50-55).

Sun teaches a target bit number corresponding to a single frame and target bit number for an uncoded VOP. Further, *Sun* clearly teaches a difference in syntactic MPEG 4 structure, such that frames, VOPs, and VOs are not equivalent. *Sun* fails to teach or suggest an uncoded frame allocatable bit number, that is the total number of allocatable bits for multiple uncoded frames in a certain period of time. The subject matter of claims 5 and 6 incorporate calculation of a parameter corresponding to *multiple frames* to be encoded in the future.

The Examiner asserts that “Sun suggests calculating an unencoded allocatable bit number corresponding to multiple uncoded VOPs within frames and also for each VO and VOPs of the frame (OA page 6, *Examiner citing to Sun*, T of Table 1). However, T in Table 1 is not the result of addition of VOPs included in multiple frames but rather is the result of addition of VOPs in one picture (frame). While perhaps not clear from the definition of Table 1, Applicant asserts that *Buff_drain* is a value for one picture according to the definition of Table 1. In turn, *T_inc* is determined based on *Buff_drain* and therein T is also given at every picture (frame). In addition buffer control is typically conducted while one picture is handled as a single unit. In conclusion,

Sun does not teach calculating the bit amount for VOPs in multiple frames, but rather teaches calculating the bit amount for VOPs in the one frame that is going to be encoded.

Ryoo and *Sun* fail to teach or suggest, alone or in combination, calculating an uncoded Frame allocatable bit number, corresponding to multiple uncoded Frames in a certain time period. At least for this deficiency the rejection of claims 5 and 6 as being unpatentable over *Ryoo* in view of *Sun* under 35 U.S.C. §103(a) should be withdrawn.

Claim 20 requires the subject matter relied on in the traversal of the rejection of claims 5 and 6 above. The Examiner applies *Ryoo* and *Sun* in rejection of claim 20 as applied to the rejection of claims 5 and 6 (OA pages 2-5). An analogous argument to that presented above in traversal of the rejection of claims 5 and 6 is hereby asserted in traversal of the rejection of claim 20. Therefore, withdrawal of the rejection of claim 20 as being unpatentable over *Ryoo* in view of *Sun* under 35 U.S.C. §103(a) is deemed proper and is respectfully requested.

Applicant also asserts the patentability of dependent claims 3, 4, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17 and 18 at least by virtue of their dependency upon one of independent claims 1, 2, 5 and 6.

Claims 23 and 24 are asserted as being patentable at least by virtue of their dependency on claims 19 and 20, respectively.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

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Respectfully submitted,



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